HIGH TEMPERATURE METHANE LINE BROADENING BY H_2

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Absorption spectra of hot methane were recorded in the 2300-3200 cm^{-1} spectral region (ν_3 mode) using a Bruker 120/125 HR Fourier transform spectrometer. Methane was heated in a quartz cell in a tube furnace at 295, 473, 673, 873 and 1073 K. Line broadening of the methane spectra was investigated by adding 50, 150 and 400 Torr of H_2 as a broadening gas to 0.5 Torr of methane. A preliminary spectral fit of the methane data was performed using Voigt line shape functions with the WSpectra program. The temperature and pressure dependence of the line broadening parameters were studied; additional spectra are needed for more temperatures and pressures. A more sophisticated analysis using non-Voigt line shapes and a multi-spectral fit will be carried out.